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(54) Title: COMPOSITION FOR CYTOCOMPATIBLE, INJECTABLE, SELF-GELLING CHITOSAN SOLUTIONS FOR EN-
CAPSULATING AND DELIVERING LIVE CELLS OR BIOLOGICALLY ACTIVE FACTORS

(57) Abstract: The present invention provides compositions and methods for tissue repair using a cytocompatible self-gelling cross-
linked hydrogel. The composition comprises a biocompatible mixture of chitosan, bifunctional dialdehyde, and hydroxylated poly-
mer, which can be used to immobilize or encapsulate viable cells, or bioactive substances. The method includes the process of mixing
bioactive substances, live cells, and/or extracellular matrix components with a cross-linking solution comprising a bifunctional alde-
hyde-treated hydroxylated polymer such as hydroxyethyl cellulose. The cross-linking solution is then mixed homogenously with a
neutral isotonic chitosan solution. The chitosan becomes cross-linked by the bifunctional aldehyde, while the cells are protected from
potentially nocive effects of the aldehyde cross-linker by the hydroxylated polymer. The injectable solution retains cell viability and
bioactivity, and immobilizes cells at the site of injection or delivery. Depending on the particular application, mixtures of chitosan
and bifunctional dialdehyde may be employed. The injectable solution also liberates bioactive substances with controlled release
kinetics from the site of injection.



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